



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/764,877

01/27/2004

Kiomars Anvari

9406

7590
Kiomars Anvari
1567 SERAFIX RD
ALAMO, CA 94507

05/04/2007

EXAMINER

GUARINO, RAHEL

ART UNIT	PAPER NUMBER
----------	--------------

2611

MAIL DATE	DELIVERY MODE
-----------	---------------

05/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/764,877

Applicant(s)

ANVARI, KIOMARS

Examiner

Rahel Guarino

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 1, 11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on January 27th 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION**Double Patenting**

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim **1-12** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **claim 1-13** of copending Application **No. 10/719950** and in view of **1-12** of copending Application **No. 10/724491**.

This is a provisional obviousness-type double patenting rejection.

Art Unit: 2611

For example,

Re claim 1, 10/764,877 (hereinafter referred to as the instant application) claims wireless hybrid peak-to-average reduction circuit for use with multi-carrier power amplifiers in a wireless communication system amongst other things. However, the instant application does not claim an "input and output of the peak-to-average reduction" to produce the phase rotation lookup table as found in claim 1 of 10/719950, but rather uses "amplitude clipped multi-carrier baseband signal" to produce the phase rotation lookup table.

It would have been obvious to one of the ordinary skill in the art the claim "the input and output of the peak-to-average reduction circuit" in the instant application. Because the input and output peak-to-average circuit results in amplitude clipped version of the multi-carrier baseband signal.

Re claim 1, 10/764,877 (hereinafter referred to as the instant application) claims wireless hybrid peak-to-average reduction circuit for use with multi-carrier power amplifiers in a wireless communication system amongst other things. However, the instant application does not claim "filters the baseband representative of individual carrier baseband signal to remove unwanted signal produced due to clipping or limiting the multi-carrier signal amplitude. And up converts the filtered baseband representative of each carrier to its original baseband frequency" as found in claim 1 of 10/724491, but rather uses "individual carrier baseband signal is phase rotated before being up converted to its original multi-carrier baseband signal".

Art Unit: 2611

It would have been obvious to one of the ordinary skill in the art the claim "filters the baseband representative of individual carrier baseband signal to remove unwanted signal produced due to clipping or limiting the multi-carrier signal amplitude. And up converts the filtered baseband representative of each carrier to its original baseband frequency" in the instant application. Because the filtered baseband representative of individual carrier baseband signal results in a phase rotated version of individual carrier baseband signal.

Claim Objections

3. **Claim 1, 11 and 12 are objected** to because of the following informalities:

Claim 1, each comprising step needs to be in a lower case letter

Claim 1, each step must end with a semicolon instead of a period.

Claim 1, line 14, "block to **converts**" needs to be replaced with "block to **convert**".

Claim 11, "dynamically **measures**" needs to be replaced with "dynamically **measured**".

Claim 11, a period is needed at the end of the sentence.

4. **Claim 12 is objected** to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim of "**claim 1 and subsequent claims**".

See MPEP § 608.01(n).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 12 recites, "wherein the DSP function can be implemented in programmable logic, FPGA, Gate Array, ASIC."

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claim 1 recites** the limitation "phase rotation lookup table " in paragraph 4, line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claim 1, 5-9, 10,12,13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinckley et al. US, 6,986,026 in view of Webster et al. US, 2003/0058952.**

Re claim 1, a wireless hybrid peak-to-average reduction circuit for use with multi-carrier power amplifiers (col. 5 line 41-49) in a wireless communication system to enhance the linearity and performance of the amplifier (col.2 line 45-52), in particular wireless cellular, PCS, wireless LAN, line of sight microwave, military, and satellite communication systems and any other none wireless applications (col. 2 line 38-44), the hybrid peak-to-average reduction circuit comprising (fig.2):

a digital signal processing block to peak-to-average reduce the multi-carrier input signal using amplitude clipping and phase rotation (col. 8 line 46-57).

A digital signal processing block (col. 10 line 64-67) to use the amplitude clipped multi-carrier baseband signal to produce the phase rotation lookup table (col. 13 line 15-20).

A digital signal processing block to converts the multi-carrier baseband input signal to individual carrier baseband signals (col. 9 line 37-49). The individual carrier baseband signal is phase rotated before being up converted to its original multi-carrier

Art Unit: 2611

baseband signal (col. Line 50-60 col. 14 line 48-57).

A digital signal processing block that clips the amplitude of the multi-carrier baseband signal by preserving the phase (fig. 3; col. 9 line 50-65).

A multi-carrier transmitter block (201) that prepares the peak-to-average reduced multi-carrier signal for delivery to multi-carrier power amplifier (col. 3 line 52-58 and col. 4 line 15-20).

A multi-carrier receiver (117; col. 3 line 38-41) for the hybrid peak-to-average reduction of IF or RF input signal to amplifier (fig.2; 239). Pinckley discloses a multi-carrier receiver (117), does not teach If the input signal is baseband then the multi-carrier receiver is bypassed.

However, Webster teaches if the input signal is baseband then the multi-carrier receiver is bypassed (para#56 line 10-12).

Therefore, taking the combined teaching of Pinckley and Webster as a whole would have been rendered obvious to one skilled in the art to modify Pinckley for bypassing the multi-carrier receiver for the benefit of resolving timing, gaining of the multi-carrier (para#56 line 3-8,"Webster").

Re claim 5, the modified invention as claimed in claim 1, wherein the multi-carrier input signals from the wireless transmitter are in bit domain and the bit domain baseband signals are up converted (col. 6 line 56-65," Pinckley"), combined and interpolated to produce the digital multi-carrier baseband signal with appropriate number of sample per symbol (col. 6 line 65 to col. 7 line 3, "Pinckley").

Re claim 6, the modified invention as claimed in claim 1, wherein the digital

Art Unit: 2611

multi-carrier baseband signal is amplitude clipped without disturbing the phase (col. 5 line 44-49,"Pinckley").

Re claim 7, the modified invention as claimed in claim 1, wherein the amplitude clipped digital multi-carrier baseband signal is converted to single channel baseband signals by digital down conversion (col. 14 line 47-57,"Pinckley"). The individual baseband signals are phase rotated using the phase from phase rotation lookup table (col. 13 line 15-29,"Pinckley"), then filtered and up converted back to their original baseband frequency before all individual baseband signals being combined again to produce the multi-carrier peak-to-average reduced baseband signal (col. 6 line 49-56, "Pinckley").

Re claim 8, the modified invention as claimed in claim 1, wherein the digital multi-carrier baseband signal is amplitude limited by a clipping circuit that calculates the amplitude and phase of the baseband signal. The amplitude of the baseband signal is clipped or is amplitude limited and then using the phase, converted back to complex baseband signal (col. 14 line 47-57,"Pinckley").

Re claim 9, the modified invention as claimed in claim 1, wherein the peak-to-average reduced signal is digitally up converted and converted to analog domain at an intermediate frequency or the output frequency (col. 6 line 56-65,"Pinckley").

Re claim 10, the modified invention as claimed in claim 1, wherein the peak-to-average reduction phase rotation lookup table is created using the individual baseband representative of the amplitude clipped multi-carrier baseband signal and the amplitude clipped multi-carrier baseband signal (col. 6 line 5-25,"Pinckley").

Re claim 12, the modified invention as claimed in claim 1 and subsequent claims,

Art Unit: 2611

when it is used in wireless cellular, wireless PCS, wireless LAN, microwave, wireless satellite, none wireless amplifiers, and any wireless communication systems used for military applications (col. 2 line 38-44, "Pinckley").

Re claim 13, the modified invention as claimed in claim 1, wherein the DSP function can be implemented in programmable logic, FPGA, Gate Array, ASIC, and DSP processor (col. 4 line 51-56, "Pinckley").

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claim 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinckley et al. US, 6,986,026 in view of Webster et al. US, 2003/0058952 and in further view of Puckette IV et al. US, 4,888,557.**

Re claim 2, the combined invention of Pinckley and Webster discloses hybrid peak-to-average reduction circuit as claimed in claim 1, does not teach a sub-harmonic sampling technique.

However, Puckette discloses sub-harmonic sampling technique (col. 2 line 58 to col. 3 line 7).

Therefore, taking the combined teaching of Puckette, Pinckley and Webster as a whole would have been rendered obvious to one skilled in the art to modify Puckette to utilize a sub-harmonic sampling for the benefit of improving receiver's specification (col. 8 line 31-34,"Puckette").

Re claim 3, the combined invention of Pinckley and Webster discloses hybrid peak-to-average reduction circuit as claimed in claim 1, does not teach multi-carrier input signal from the wireless transmitter is sampled using sub-harmonic sampling technique at the input frequency or at an intermediate frequency and the digitized multi-carrier input signal is down converted digitally and decimated to the appropriate number of samples per symbol.

However, Puckette discloses a sub-harmonic sampling technique (col. 2 line 58 –65,"Puckette"), digital down-conversion (col. 3 line 5-7,"Puckette") and decimation to the appropriate number of samples per symbol for further digital signal processing (col. 5 line 3-15,"Puckette").

Therefore, taking the combined teaching of Puckette, Pinckley and Webster as a whole would have been rendered obvious to one skilled in the art to modify Puckette to utilize a sub-harmonic sampling, digital down-conversion and decimation for the benefit of anti-aliasing (col. 5 line 20-30, "Puckette").

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2611

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinckley et al. US, 6,986,026 in view of Webster et al. US, 2003/0058952 and in further view of Leffel et al. US, 7,109,792.

Re claim 11, the combined invention of Pinckley and Webster discloses hybrid peak-to-average reduction circuit as claimed in claim 1, does not disclose the received signal strength of the input signal to hybrid peak-to-average reduction circuit and transmit signal strength of the output from the hybrid peak-to-average reduction circuit is dynamically measures to adjust the total gain of the peak-to-average reduction circuit zero.

However, Leffel discloses (fig. 15) the received signal strength (RSSI measures signal power) of the input signal (col. 17 line 61-65) to hybrid peak-to-average reduction circuit and transmit signal strength of the output from the hybrid peak-to-average reduction circuit (col. 18 line 15-23) is dynamically measures to adjust the total gain of the peak-to-average reduction circuit zero.

Therefore, taking the combined teaching of Pinckley, Webster and Leffel as a whole would have been rendered obvious to one skilled in the art to modify Leffel to measure the signal strength of hybrid peak-to-average for the benefit of determining and/or adjusting the linearity of the amplifier (col. 18 line 42-59, "Leffel").

Art Unit: 2611

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinckley et al. US, 6,986,026 in view of Webster et al. US, 2003/0058952 and in further view of Peterzell et al. US, 2002/0132597.**

Re claim 4, the combined invention of Pinckley and Webster discloses hybrid peak-to-average reduction circuit as claimed in claim 1, does not disclose sampling using Nyquist theorem.

However, Peterzell discloses a Nyquist theorem (para#87).

Therefore, taking the combined teaching of Pinckley, Webster and Peterzell as a whole would have been rendered obvious to one skilled in the art to modify Peterzell of using Nyquist theorem for the benefit of producing a signal with the appropriate number of samples per symbol.

Art Unit: 2611

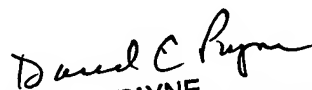
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rahel Guarino whose telephone number is 571-270-1198. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Payne David can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RG


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER